What is claimed is:

1. A method of decoding a received phase modulated carrier signal comprising the steps of:

(A) computing a total probability of a current data bit being "one" or "zero" at a time epoch by computing a plurality of probabilities of phase transitions at a plurality of time epochs, each said probability of a phase transition at one said time epoch being a probability of a phase transition between a current phase of said received phase modulated signal and a phase corresponding to a previously computed data bit;

and

(B) outputting said current data bit as being "one" or "zero" at said time epoch based on said computed in said step (A) total probability.

2. A method of decoding a phase modulated carrier signal comprising the steps of:

(A) receiving said phase modulated carrier signal;

(B) performing a frequency loop lock (FLL) tracking of said received phase modulated signal having a carrier frequency;

(C) locking on to said carrier frequency of said received phase modulated signal by using said FLL;

(D) computing a total probability of a current data bit being "one" or "zero" at a time epoch by computing a plurality of probabilities of phase transitions at a plurality of time epochs, each said probability of a phase transition at one said time epoch being a probability of a phase transition between a current phase of said received phase modulated signal and a phase corresponding to a previously

computed data bit;

and

(E) outputting said current data bit as being "one" or "zero" at said time epoch based on said computed in said step (D) total probability.

3. The method of claim 2, wherein said step (D) further comprises the steps of:

(D1) computing inphase and quadrature correlation data corresponding to said phase modulated carrier signal at a plurality of time epochs;

(D2) computing a first partial probability of a current data bit at a current time epoch by using said computed in said step (D1) inphase and quadrature correlation data corresponding to at least two consecutive time epochs, each said consecutive time epoch preceding said current time epoch;

(D3) repeating said step (D2) for a plurality of time epochs preceding said current time epoch to obtain a plurality of partial probabilities of said current data bit;

and

(D4) computing said total probability of said current data bit by using said computed in said step (D3) plurality of partial probabilities of said current data bit.

4. The method of claim 2 further comprising the step of:

(F) multiplying said current data bit by an absolute data polarity.

5. The method of claim 4, wherein said step (F) of multiplying said current data bit by said absolute data polarity further includes the step of:

(F1) obtaining an absolute data polarity via a preamble detection.

6. The method of claim 4 further comprising the step of:

(G) performing a data correction operation on a plurality of said outputted data bits.

7. The method of claim 4 further comprising the step of:

(H) performing a Hamming code data correction operation on a plurality of said outputted data bits.

8. A method of decoding a GPS carrier signal comprising the steps of:

(A) receiving a phase modulated GPS signal by using a GPS antenna;

(B) extracting a GPS data from said received phase modulated GPS signal; and

(C) computing a total probability of a current GPS data bit being "one" or "zero" at a GPS time epoch by computing a plurality of probabilities of phase transitions at a plurality of GPS time epochs, each said probability of a phase transition at one said GPS time epoch being a probability of a phase transition between a current phase of said received GPS phase modulated signal and a phase corresponding to a previously computed data bit.

9. A method of decoding a GPS carrier signal comprising the steps of:

(A) receiving a phase modulated GPS signal by using a GPS antenna;

(B) performing a frequency loop lock (FLL) tracking of a received phase modulated GPS signal having a carrier frequency by using a GPS digital tracker;

(C) locking on to said GPS carrier frequency of said received phase modulated GPS signal by using a tracking and navigation block;

(D) extracting a GPS data from said received phase modulated GPS signal; and

(E) computing a total probability of a current GPS data bit being "one" or "zero" at a GPS time epoch by computing a plurality of probabilities of phase transitions at a plurality of GPS time epochs, each said probability of a phase transition at one said GPS time epoch being a probability of a phase transition between a current phase of said received GPS phase modulated signal and a phase corresponding to a previously computed data bit.

10. The method of claim 9, wherein said step (E) further comprises the steps of:

(E1) computing inphase and quadrature GPS correlation data corresponding to said GPS phase modulated carrier signal at a plurality of GPS time epochs;

(E2) computing a first partial probability of a current GPS data bit at a current GPS time epoch by using said computed in said step (E1) inphase and quadrature GPS correlation data corresponding to at least two consecutive GPS time epochs, each said consecutive GPS time epoch preceding said current GPS time epoch;

(E3) repeating said step (E2) for a plurality of GPS time epochs preceding said current GPS time epoch to obtain a plurality of partial probabilities of said current GPS data bit;

and

(E4) computing said total probability of said current GPS data bit by using said computed in said step (E3) plurality of partial probabilities of said current GPS data bit.

11. The method of claim 9 further comprising the step of:

(F) outputting said current GPS data bit as being "one" or "zero" at said GPS time epoch based on said computed in said step (E) total probability.

12. The method of claim 11 further comprising the step of:

(G) multiplying said current GPS data bit by an absolute GPS data polarity.

13. The method of claim 12, wherein said step (G) of multiplying said current GPS data bit by said absolute GPS data polarity further includes the step of:

(G1) obtaining said absolute GPS data polarity via a GPS preamble detection.

14. The method of claim 12 further comprising the step of:

(H) performing a data correction operation on a plurality of said outputted GPS data bits.

15. The method of claim 12 further comprising the step of:

(I) performing a Hamming code data correction operation on a plurality of said outputted GPS data bits.

16. A method of decoding a carrier signal comprising the steps of:

(A) receiving a phase modulated signal by using an antenna;

(B) extracting a data from said received phase modulated signal;

and

(C) computing a total probability of a current data bit being "one" or "zero" at a time epoch by computing a plurality of probabilities of phase transitions at a plurality of time epochs, each said probability of a phase transition at one said

time epoch being a probability of a phase transition between a current phase of said received phase modulated signal and a phase corresponding to a previously computed data bit.

17. A method of decoding a carrier signal comprising the steps of:

(A) receiving a phase modulated signal by using an antenna;

(B) performing a frequency loop lock (FLL) tracking of a received phase modulated signal having a carrier frequency by using a digital tracker;

(C) locking on to said carrier frequency of said received phase modulated signal by using a tracking and navigation block;

(D) extracting a data from said received phase modulated signal;

and

(E) computing a total probability of a current data bit being "one" or "zero" at a time epoch by computing a plurality of probabilities of phase transitions at a plurality of time epochs, each said probability of a phase transition at one said time epoch being a probability of a phase transition between a current phase of said received phase modulated signal and a phase corresponding to a previously computed data bit.

18. The method of claim 17, wherein said step (E) further comprises the steps of:

(E1) computing inphase and quadrature correlation data corresponding to said phase modulated carrier signal at a plurality of time epochs;

(E2) computing a first partial probability of a current data bit at a current time epoch by using said computed in said step (E1) inphase and quadrature correlation data corresponding to at least two consecutive time epochs, each

said consecutive time epoch preceding said current time epoch;

(E3) repeating said step (E2) for a plurality of time epochs preceding said current time epoch to obtain a plurality of partial probabilities of said current data bit;

and

(E4) computing said total probability of said current data bit by using said computed in said step (E3) plurality of partial probabilities of said current data bit.

19. The method of claim 17 further comprising the step of:

(F) outputting said current data bit as being "one" or "zero" at said time epoch based on said computed in said step (E) total probability.

20. The method of claim 19 further comprising the step of:

(G) multiplying said current data bit by an absolute data polarity.

21. The method of claim 20, wherein said step (G) of multiplying said current data bit by said absolute data polarity further includes the step of:

(G1) obtaining said absolute data polarity via a preamble detection.

22. The method of claim 20 further comprising the step of:

(H) performing a data correction operation on a plurality of said outputted data bits.

23. The method of claim 20 further comprising the step of:

(I) performing a Hamming code data correction operation on a plurality of

said outputted data bits.

24. An apparatus for decoding a received phase modulated carrier signal comprising:

a means for computing a total probability of a current data bit being "one" or "zero" at a time epoch by computing a plurality of probabilities of phase transitions at a plurality of time epochs, each said probability of a phase transition at one said time epoch being a probability of a phase transition between a current phase of said received phase modulated signal and a phase corresponding to a previously computed data bit;

and

a means for outputting said current data bit based on said computed total probability of said current data bit being "one" or "zero" at said time epoch .

25. An apparatus for decoding a received phase modulated carrier signal comprising:

a means for receiving said phase modulated carrier signal;

a means for performing a frequency loop lock (FLL) tracking of said received phase modulated signal having a carrier frequency;

a means for locking on to said carrier frequency of said received phase modulated signal;

a means for computing a total probability of a current data bit being "one" or "zero" at a time epoch by computing a plurality of probabilities of phase transitions at a plurality of time epochs, each said probability of a phase transition at one said time epoch being a probability of a phase transition between a current phase of said received phase modulated signal and a phase

corresponding to a previously computed data bit;

and

a means for outputting said current data bit as being "one" or "zero" at said time epoch based on said computed total probability.

26. The apparatus of claim 25 further comprising:

a means for performing a data correction operation on a plurality of said outputted data bits.

27. The apparatus of claim 25 further comprising:

a means for performing a Hamming code data correction operation on a plurality of said outputted data bits.

28. An apparatus for decoding a GPS carrier signal comprising:

a means for receiving a phase modulated GPS signal by using a GPS antenna;

a means for extracting a GPS data from said received phase modulated GPS signal;

and

a means for computing a total probability of a current GPS data bit being "one" or "zero" at a GPS time epoch by computing a plurality of probabilities of phase transitions at a plurality of GPS time epochs, each said probability of a phase transition at one said GPS time epoch being a probability of a phase transition between a current phase of said received GPS phase modulated signal and a phase corresponding to a previously computed data bit.

29. An apparatus for decoding a GPS carrier signal comprising:

a means for receiving a phase modulated GPS signal;

a means for performing a frequency loop lock (FLL) tracking of a received phase modulated GPS signal having a carrier frequency;

a means for locking on to said GPS carrier frequency of said received phase modulated GPS signal;

a means for extracting a GPS data from said received phase modulated GPS signal;

and

a means for computing a total probability of a current GPS data bit being "one" or "zero" at a GPS time epoch by computing a plurality of probabilities of phase transitions at a plurality of GPS time epochs, each said probability of a phase transition at one said GPS time epoch being a probability of a phase transition between a current phase of said received GPS phase modulated signal and a phase corresponding to a previously computed data bit.

30. The apparatus of claim 29 further comprising:

a means for performing a data correction operation on a plurality of said outputted data bits.

31. The apparatus of claim 29 further comprising:

a means for performing a Hamming code data correction operation on a plurality of said outputted data bits.

32. The apparatus of claim 29, wherein said means for receiving said phase modulated GPS signal further comprises:

a GPS antenna.

33. The apparatus of claim 29, wherein said means for performing said frequency loop lock (FLL) tracking of said received phase modulated GPS signal further comprises:

a digital tracker.

34. The apparatus of claim 29, wherein said means for extracting said GPS data from said received phase modulated GPS signal further comprises:

a data extraction block

35. An apparatus for decoding a carrier signal comprising:

a means for receiving a phase modulated signal by using an antenna;

a means for extracting a data from said received phase modulated signal; and

a means for computing a total probability of a current data bit being "one" or "zero" at a time epoch by computing a plurality of probabilities of phase transitions at a plurality of time epochs, each said probability of a phase transition at one said time epoch being a probability of a phase transition between a current phase of said received phase modulated signal and a phase corresponding to a previously computed data bit.

36. An apparatus for decoding a carrier signal comprising:

a means for receiving a phase modulated signal by using an antenna;

a means for performing a frequency loop lock (FLL) tracking of a received phase modulated signal having a carrier frequency by using a digital tracker;

a means for locking on to said carrier frequency of said received phase modulated signal by using a tracking and navigation block;

a means for extracting a data from said received phase modulated signal; and

a means for computing a total probability of a current data bit being "one" or "zero" at a time epoch by computing a plurality of probabilities of phase transitions at a plurality of time epochs, each said probability of a phase transition at one said time epoch being a probability of a phase transition between a current phase of said received phase modulated signal and a phase corresponding to a previously computed data bit.

37. The apparatus of claim 36 further comprising:

a means for performing a data correction operation on a plurality of said outputted data bits.

38. The apparatus of claim 36 further comprising:

a means for performing a Hamming code data correction operation on a plurality of said outputted data bits.

39. A computer-readable storage medium useful in association with a receiver of a phase modulated signal; said receiver having a processor and memory, said computer-readable storage medium including computer-readable code instructions configured to cause said processor to execute the steps of:

(A) computing a total probability of a current data bit being "one" or "zero" at a time epoch by computing a plurality of probabilities of phase transitions at a plurality of time epochs, each said probability of a phase transition at one said

time epoch being a probability of a phase transition between a current phase of said received phase modulated signal and a phase corresponding to a previously computed data bit;

and

(B) outputting said current data bit as being "one" or "zero" at said time epoch based on said computed in said step (A) total probability.

40. A computer-readable storage medium useful in association with a decoder of a phase modulated signal; said decoder having a processor and memory, said computer-readable storage medium including computer-readable code instructions configured to cause said processor to execute the steps of:

(1) computing inphase and quadrature correlation data corresponding to said phase modulated carrier signal at a plurality of time epochs;

(2) computing a first partial probability of a current data bit at a current time epoch by using said computed in said step (1) inphase and quadrature correlation data corresponding to at least two consecutive time epochs, each said consecutive time epoch preceding said current time epoch;

(3) repeating said step (2) for a plurality of time epochs preceding said current time epoch to obtain a plurality of partial probabilities of said current data bit;

and

(4) computing said total probability of said current data bit by using said computed in said step (3) plurality of partial probabilities of said current data bit.

41. A computer program product that includes a computer-readable medium

having a sequence of instructions which, when executed by a processor, causes the processor to execute a process for decoding a phase modulated signal; the process comprising:

(A) computing a total probability of a current data bit being "one" or "zero" at a time epoch by computing a plurality of probabilities of phase transitions at a plurality of time epochs, each said probability of a phase transition at one said time epoch being a probability of a phase transition between a current phase of said received phase modulated signal and a phase corresponding to a previously computed data bit;

and

(B) outputting said current data bit as being "one" or "zero" at said time epoch based on said computed in said step (A) total probability.